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#### ABSTRACT

An automatic transmission control system for an automobile, comprising a vehicle weight estimation unit which estimates a vehicle weight of the automobile; a torque estimation unit which estimates an output torque; an acceleration input unit which accepts an acceleration signal; a load estimation unit (110) which estimates a running load from the estimated vehicle weight, the estimated output torque and the accepted acceleration; a memory which stores a plurality of shift schedules therein; and a gear position determination unit (109) which includes the memory, and which selects one of the shift schedules in accordance with the vehicle weight and the estimated running load, so as to determine a gear position of an automatic transmission of the automobile in conformity with the selected shift schedule. An exact shift operation conformed to the vehicle weight and the running load can be performed, and an enhanced fuel consumption can be attained.